

## COLUMBIA ANALYTICAL SERVICES, INC.

Client: Fairbanks Environmental Services, Inc. Service Request No.: K1107465  
Project: OU5 Ft. Wainwright/5010-21/NPDL# 11-038 Date Received: 08/12/2011  
Sample Matrix: Solid

### CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

#### Sample Receipt

Seven sediment samples were received for analysis at Columbia Analytical Services on 08/12/2011. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

#### General Comments:

The DoD QSM 4.2 requires detections reported to the Method Detection Limit (MDL). Values greater than the MDL and less than the Limit of Quantitation (LOQ) were flagged as estimates (J). Values less than the MDL and Limit of Detection (LOD) were reported as non-detect (ND). The LOD for each analyte is verified quarterly by the laboratory using procedures defined in Grey Box D-13 of the DoD Quality Systems Manual Version 4.2.

The Limit of Quantitation (LOQ) is verified quarterly for each analyte using procedures defined in Grey Box D-14 of the DoD Quality Systems Manual Version 4.2.

#### Gasoline Range Organics by Method AK101

##### Surrogate Exceptions:

The control criteria for 4-Bromofluorobenzene in sample “11FW5S03SE, 11FW5S04SE, and 11FW5S05SE” was not applicable. The analysis of the sample required a dilution, which resulted in a surrogate concentration below the reporting limit. No further corrective action was appropriate.

The control criteria were exceeded for 4-Bromofluorobenzene in sample “11FW5S06SE” due to matrix interference. A re-analysis was performed, but produced similar results. The results of the original analysis were reported. No further corrective action was required.

No other anomalies associated with the analysis of these samples were observed.

#### Diesel Range Organics by Method AK102

No anomalies associated with the analysis of these samples were observed.

## Volatile Organic Compounds by EPA Method 8260

### Calibration Verification Exceptions:

The DOD specific upper control criterion was exceeded for trans-1,2-Dichloropropene in Continuing Calibration Verification (CCV) J:\MS13\0815F004.D. The field samples analyzed in this sequence did not contain the analyte in question. Since the apparent problem indicated a potential high bias, the data quality was not affected. No further corrective action was required as per the DOD QSM.

The DOD specific upper control criterion was exceeded for Carbon Disulfide in Continuing Calibration Verification (CCV) J:\MS13\0819F003.D. The field samples analyzed in this sequence did not contain the analyte in question. Since the apparent problem indicated a potential high bias, the data quality was not affected. No further corrective action was required as per the DOD QSM.

### Surrogate Exceptions:

The control criteria were exceeded for 4-Bromofluorobenzene in samples “11FW5S04SE and 11FW5S06SE” due to matrix interference. The presence of non-target background components prevented adequate resolution of the surrogate. Accurate quantitation was not possible. Also, the sample containers provided were field spiked with the surrogate in question for AK101 analysis. 8260 analysis is not controlled on field spiked surrogates. No further corrective action was appropriate.

### Matrix Spike Recovery Exceptions:

The matrix spike and duplicate matrix spike recoveries of Bromomethane for samples 11FW5S02SEMS KWG1108074-1 and 11FW5S02SEDMS KWG1108074-2 were outside control criteria. There were no positive results in the associated parent sample for the compound in question, so no flag was applied. The matrix spike outlier suggests a potential low bias in the matrix. No further corrective action was appropriate.

### Elevated Detection Limits:

Samples “11FW5S03SE, 11FW5S04SE, and 11FW5S05SE” required further dilution than normal for medium level analysis due to the presence of elevated levels of non-target analytes. The reporting limits were adjusted to reflect the dilution.

The detection limit was elevated for m,p-Xylenes, n-Propylbenzene sec-Butylbenzene, n-Butylbenzene, and Naphthalene in sample “11FW5S03SE”. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the normal limit. The results were “i” flagged to indicate the matrix interference.

The detection limit was elevated for Chlorobenzene, Ethylbenzene, 1,3,5-Trimethylbenzene, tert-Butylbenzene, and Naphthalene in sample “11FW5S04SE”. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the normal limit. The results were “i” flagged to indicate the matrix interference.

The detection limit was elevated for n-Butylbenzene and Naphthalene in samples “11FW5S05SE and 11FW5S06SE”. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the normal limit. The results were “i” flagged to indicate the matrix interference.

### Sample Notes and Discussion:

Manual integration of one or more chromatographic peaks was required to correct the integration performed by the automated data processing program. The manual integration was performed in accordance with CAS policy, which is consistent with the National Environmental Laboratory Accreditation Program (NELAP), Department of Defense (DOD), and other certifying agencies. The analytes that required manual integrations are identified on each sample report contained in this data package.

No other anomalies associated with the analysis of these samples were observed.

## Polynuclear Aromatic Hydrocarbons by EPA Method 8270

### Internal Standard Exceptions:

The internal standard recoveries of Naphthalene-d8 and Acenaphthene-d10 in samples “11FW5S04SE, 11FW5S05SE, and 11FW5S06SE” were outside control criteria because of matrix interference. The samples were reanalyzed at dilutions. The internal standards in question were within control criteria in the diluted analysis. All affected analytes were reported from the diluted analyses. The detection limits for the affected analytes has been elevated to reflect the dilution.

### Elevated Detection Limits:

The detection limits were elevated for various analytes in all samples. The chromatograms indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the normal limit. The results were flagged to indicate the matrix interference.

The detection limits were elevated for all analytes quantitated using the flowing internal standards in samples “11FW5S04SE, 11FW5S05SE, and 11FW5S06SE”: Naphthalene-d8, Acenaphthene-d10. The chromatograms indicated the presence of non-target background components. The samples were diluted in order to achieve acceptable resolution and recovery of the affected internal standards.

### Sample Notes and Discussion:

The results reported for Naphthalene and Acenaphthene in samples “11FW5S04SE and 11FW5S05SE” may contain a slight bias. The chromatogram indicated the presence of non-target background components. The matrix interference may have resulted in a slight high bias in the affected samples. The results were flagged with “X” to indicate the issue.

Manual integration of one or more chromatographic peaks in all samples was required to correct the integration performed by the automated data processing program. The manual integration was performed in accordance with CAS policy, which is consistent with the National Environmental Laboratory Accreditation Program (NELAP), Department of Defense (DOD), and other certifying agencies. The analytes that required manual integrations are identified on each sample report contained in this data package.

No other anomalies associated with the analysis of these samples were observed.

Approved by \_\_\_\_\_ Date \_\_\_\_\_